SECTION 7: TRANSPORTATION DESIGN AND IMPROVEMENT STANDARDS

A. Intent. The intent of this Section is to ensure that new Subdivisions contribute to orderly development and public health, safety and general welfare of County residents and are designed to (i) provide for a safe and efficient Transportation System; (ii) provide for an appropriate dedication of land for roadways and Trails; and (iii) provide for the adequate improvement of roads that mitigate expected impacts that are directly attributable to the subdivision.

B. General. The design standards contained in these Regulations are minimum standards and shall apply to all construction and reconstruction of the Transportation System.

C. General Design.

1. Roads. The arrangement, type, extent, width, grade, and location of all roads shall be considered in relation to existing and planned roads, topographical conditions, public convenience and safety, and proposed uses of the land to be served by such roads.

2. Relation to Un-Subdivided Lands. When a proposed Subdivision (approved pursuant to Title 76, Copt. 3, Part 5 and 6, MCA) adjoins un-subdivided land (lands or parcels not created by a recorded Subdivision plat) and access to the un-subdivided land must pass through the proposed Subdivision, at a minimum, the Subdivider shall provide adequate Rights-Of-Way or public road easements.

   This requirement may be waived if the Commission finds one of the following criteria is met:

   a. Topography or other physical conditions would make it impracticable to provide access to adjacent un-subdivided property.

   b. Adequate public access is otherwise available to the adjacent un-subdivided properties.

   c. When the adjoining un-subdivided property is under public ownership.

   This requirement shall be waived by the Commission if the adjoining un-subdivided property is subject to a conservation easement or other legally

restrictive covenant as confirmed by the Gallatin County Attorney's Office.

3. Relation to Adjacent Subdivided Lands. The Subdivider shall arrange interior Subdivision roads to provide for continuation of roads between adjacent subdivided properties (lands or parcels created by a recorded Subdivision plat).

4. Separation of Through and Local Traffic. Where a Subdivision abuts or contains an existing or proposed Arterial or Collector road, the County and/or MDT may require the Subdivider to provide additional Right-Of-Way, frontage roads, reverse frontage with a reservation prohibiting access along the rear property line (no access strip), screen planting, or such other treatment as may be necessary for protection of residential properties and to afford separation of through and local traffic.

5. Distance Between Parallel Rights-Of-Way. Where a Subdivision borders on or contains a railroad, limited access highway, Water Conveyance Facility, or stream right-of-way, the County and/or MDT may require the Subdivider to provide a road approximately parallel to and on each side of such Right-Of-Way at a distance suitable to allow for the appropriate use of the intervening land. Such distances shall allow for the requirements of approach grades and future grade separation.

6. Dead-End Roads. No dead-end roads shall be permitted without an approved turn around. Where roads terminate, the Subdivider shall provide a cul-de-sac. A "T" turnaround at the terminus may be allowed for interior Subdivision roads that provide access to two lots or less with approval of the appropriate fire district or fire service area. Cul-de-sacs and "T" turnarounds must conform to the design and construction standards of Tables 7.1, 7.2, 7.3 and 7.4 and Figure 7.A. Where a dead-end road will be extended in the future, a temporary cul-de-sac or "T" turnaround shall be provided.

   "T" turnarounds shall include:
   a. two straight backup lengths of 50 feet each;
   b. an inside turning radius of 26 feet; and
   c. an outside turning radius of 38 feet.

7. Subdivision Access. To facilitate the safe and efficient movement of vehicular traffic, the provision of emergency services, and the placement of utility easements, the Subdivider shall provide all Subdivisions with six or more lots with two or more means of physical access. Access locations shall be designed to ensure public health and safety and shall be spaced in accordance with Table 7.5.

To allow for sufficient access for emergency providers, the County in coordination with the appropriate fire district or fire service area may require the Subdivider to provide a second access for Minor Subdivisions.

8. Bridges and Culverts. The Subdivider may be required to install a bridge or culvert where a road intersects a Watercourse or a Water Conveyance Facility.

   All roads that intersect Water Conveyance Facilities shall be agreed to in writing by the water users and/or Water Conveyance Facilities authorized representatives. Where the Subdivider is not able to obtain a written agreement the procedure outlined in Section 6.A.(6)(b)(c) shall be followed.

   Drainage plans shall accompany road plans with Preliminary Plat applications for all Subdivisions. Bridges and culverts shall meet the following minimum standards:

   a. Bridges shall be built to the AASHTO established H-20 standard for bridge loading and certified by an Engineer.
   b. All culverts shall, at a minimum, extend across the entire improved width of the road cross section. An Engineer in coordination with the County shall determine the size and length of the culvert and the amount of backfill over the culvert.
   c. The minimum capacity of a culvert shall be equivalent to a circular diameter of 15 inches.

9. Approach Permits. Prior to Final Plat approval approach permits shall be required from the Road Department for all approaches onto County roads and from MDT for approaches onto state highways.

10. Road Dedication. All Access Roads and interior Subdivision roads shall be dedicated to the public or, if the criteria of this Section are met, be a public road easement. Roads dedicated to the public are accepted for public use, but the County accepts no responsibility for maintaining the same.

11. Public Road Easements. Public road easements shall:

    a. be reviewed by the County Attorney;

    b. be recorded with the Clerk and Recorder;

c. grant to the public an unrestricted right of ingress and egress from a public road to the property to be subdivided; and

d. be maintained by the Property Owner's Association as agreed to by Covenant recorded with Final Plat.

12. Intersections. It is the County's goal that all intersections shall not operate below a LOS "C" standard or a standard deemed acceptable by MDT. LOS for two-way/one-way stop controlled intersections shall be determined by the average LOS of the stop controlled movements of the intersection. The LOS for all other intersections shall be determined by the average LOS of all movements through an intersection.

If it is determined by a TIS that a proposed Subdivision will add traffic to an existing intersection that operates below a LOS "C" standard or if a proposed Subdivision causes the LOS to drop below a LOS "C" standard then reasonable mitigation of impacts from the Subdivision shall be completed.

New intersections shall be designed and constructed according to AASHTO standards and shall meet the following requirements:

a. The intersection of more than two roads at one point shall be avoided.

b. Roads shall be laid out so as to intersect as nearly as possible at right angles and no road shall intersect any other road at less than a 80 degree angle for Arterial and Collector Roads and a 70 degree angle for Local Roads, as indicated in Table 7.1.

c. Two roads meeting a third road from opposite sides shall meet at the same point, or their centerline shall be off-set as shown in Table 7.5.

d. Any road, which intersects a paved Collector, or Arterial road shall be paved 100 feet from the existing edge of pavement, or to a length as required by site specific conditions and approved by the County and/or MDT.

13. Determination of ADT. ADT shall be determined as an average of ten trips per day per single-family lot at the time of Preliminary Plat. ADT for lots approved for multi-family development and/or commercial development shall be determined based on the figures from the then most current volume of the Institute of Traffic Engineers (ITE) Manual.

D. Road Names. All new road names shall be verified by the Gallatin County GIS Department prior to Final Plat approval.

E. Lot Access.

1. Access. Roads that provide physical access to lots shall meet County road standards. See Tables 7.1, 7.2, 7.3, 7.4, 7.5 and Figure 7.A.

2. Plats. All Final Plats shall contain a statement requiring access to lots be built to the Lot Access Standards.

3. Lot Access Standards. The top width of the finished lot access surface shall be a minimum of 18 feet wide on Collector roads and 14 feet wide on all other roads.

4. Access to Building Site. As part of the Preliminary Plat application, the Subdivider shall provide documentation that the building site within each lot has physical access and is accessible by emergency service vehicles.

5. Paved Intersections. Any lot access which intersects a paved Collector or Arterial road shall be paved a minimum of 20 feet from the existing edge of pavement, or to a length as required by site specific conditions and approved by the County and/or MDT.

F. Access Road General Standards. Access Roads shall meet the following requirements:

1. Access Road width and construction standards contained in this Regulation shall apply. See Tables 7.1, 7.2, 7.3, 7.4, 7.5 and Figure 7.A. When a Transportation Plan provides additional standards beyond those required by this regulations the stricter or higher standard shall apply.

2. Access Roads shall be dedicated to the public, or shall have a public road easement that meets the criteria of this Regulation.

3. Any Access Roads identified as a Collector, or Arterial in a Transportation Plan, shall provide the necessary Right-Of-Way as defined in the Transportation Plan.

4. If insufficient Right-Of-Way exists or if the impacts from Subdivision identified in a TIS do not require the construction of the Access Road to the design standards contained within a Transportation Plan, the

Subdivider may recommend an alternative standard to the County Commission.

5. If safe Subdivision access cannot be provided or if impacts on local services cannot be reasonably mitigated, the Subdivision may be denied by the County Commission.

6. In order to assess the adequacy of existing Access Roads, an Engineer, shall complete a section/pavement design report, based on current AASHTO Standards, specific site soil data, existing pit-run, existing crushed base, existing asphalt, and design-year traffic loading conditions. The section/pavement design report shall specify testing procedures, minimum road sections for current and projected traffic loads, and recommended improvements if necessary. Existing Access Roads not meeting the section design strength may require improvements, or other mitigation efforts. If the existing Access Road section is acceptable and meets the recommendations of the section/pavement design report, the Subdivider may still need to complete other improvements to the Access Roads, per recommendations of a TIS.

G. Access Road Improvement and Paving Standards. The Subdivider shall improve the Access Road(s) to the standards in Tables 7.1, 7.2, 7.3, 7.4, 7.5 and Figure 7.A of these Regulations based on the ADT generated by the Subdivision and existing traffic determined by either the County, MDT, or a TIS in accordance with Section 9.G.

Where an Access Road has 300 ADT or where the Subdivision will add traffic that causes trips on an Access Road to exceed 300 ADT, the Access Road shall be paved as described in this Section. See Tables 7.1, 7.2, 7.3, 7.4, 7.5 and Figure 7.A.

The Subdivider may request the County Commission to accept recommendations / mitigation measures identified in a TIS for the Subdivision prepared in accordance with Section 9.G of these Regulations in lieu of paving the Access Road.

The Subdivider whose Subdivision is not required by these Regulations to complete a TIS but has cumulative ADT that requires an Access Road to be paved may voluntarily prepare a TIS in accordance with Section 9.G of these Regulations and request the County Commission to accept recommendations/mitigation measures identified in the TIS.

H. Interior Subdivision Road Improvement Requirements. Except as otherwise provided**,** all interior Subdivision roads for all Subdivisions with an ADT of more than 300 trips per day shall be paved and built to the paving standards in these

Regulations (see Tables 7.1, 7.2, 7.3, 7.4, 7.5 and Figure 7.A.). All interior Subdivision roads for Major Subdivisions identified as a Collector, or Arterial in a Transportation Plan shall be built to the applicable design standards identified in the Transportation Plan. All roads within Subdivisions located within an adopted Growth Policy area of a city or town shall meet the requirements of Section 7 M of this Regulation.

I. Construction Standards for All Roads. The following construction standards apply to all interior Subdivision roads and to all Access Roads required to be constructed pursuant to these Regulations:

1. Subgrade Excavation and Embankment. The subgrade for all roads shall be finished within a tolerance of three-quarters (3/4) of an inch measured as a vertical ordinate from the face of a ten-foot straight edge. Compaction of the subgrade shall be accomplished through methods acceptable to an Engineer. The subgrade shall be compacted, in place, to 95 percent of the maximum dry density as determined by AASHTO Designation T-99. This compaction is required before any gravel surfacing material is placed on the subgrade. Striping requirements shall be certified by an Engineer.

2. Sub Base Gravel. (Pit run selected surfacing.) In all sub base gravel material up to five percent "oversized" material is permitted provided that the "over sized" material passes the screen size immediately larger that the top size specified in Table 7.3 (seven inch for six inch maximum) will be allowed. Any sub base gravel used from onsite shall be tested for gradation, plasticity, and liquid limit that meet the most current Montana Public Works Standard Specifications or these Regulations.

3. Road Construction Standards. All road construction shall meet the standards set forth in the most current edition of the Montana Public Works Standard Specifications, these Regulations, or the construction standards included in any construction design manual adopted by the County Commissioners. Any deviation from these standards must be certified by an Engineer in coordination with the County and/or MDT. All roads shall be constructed according to the design standards set forth in the following Tables and Figure 7.A.

TABLE 7.1
ROAD DESIGN STANDARDS

	ARTERIALS AND COLLECTORS		LOCAL ROADS	
TERRAIN	ORDINARY	MOUNTAINOUS*	ORDINARY	MOUNTAINOUS*
RIGHT-OF-WAY WIDTH	90’-120’	60'	60'	60'
CENTERLINE RADIUS ON CURVES	300'	150'	150'	150'
TANGENT LENGTH BETWEEN REVERSE CURVES	100'	50'	50'	---
STOPPING SITE DISTANCE	300'	200'	200'	100'
ANGLE OF INTERSECTING CENTERLINES	80º	80º	70º	70º
CURB RADIUS AT INTERSECTIONS	50’	40’	40’	25’
LENGTH OF CUL-DE-SAC	---	---	1000'**	2500'
OUTSIDE RADIUS ON CUL-DE-SAC R.O.W.	---	---	60'	60'
GRADE - MAXIMUM	7%	10%	10%	12%***
GRADE - MINIMUM	.5%	.5%	.5%	.5%
MAXIMUM GRADE WITHIN 150' OF INTERSECTING CENTERLINES	3%	3%	---	---
MAXIMUM GRADE WITHIN 75' OF INTERSECTING CENTERLINES	---	---	3%	3%

Note: All standards are minimum standards unless noted. Road design standards identified within a Transportation Plan shall supersede any of the above standards.
*Mountainous terrain is defined as terrain that has a cross slope exceeding 15%.
**Cul-de-sac roads that provide access to unsubdivided land may exceed this length.
***Grades of over 10% shall not exceed 100' in length.

TABLE 7.2
GRAVEL AND/OR PAVING WIDTH STANDARDS

ADT	MINIMUM FINISHED GRAVEL WIDTH	INIMUM PAVING WIDTH
10-50	24'	22’
51+	26’	24’
COLLECTORS & ARTERIALS	30’ or Trans. Plan	28’ or Trans. Plan
CUL-DE-SAC		
	51’ Radius	50’ Radius

Note: Paving not required until the projected ADT reaches 300.

TABLE 7.3

SUB-BASE GRAVEL						
Pit run selected surfacing shall meet the following gradation:						
	1	2	3	4	5	6
6 inch sieve	100%					
3 inch sieve		100%				
2 1/2 inch sieve			100%			
2 inch sieve				100%		
1 1/2 inch sieve					100%	
1 inch sieve						100%
No. 4 sieve	25-60% for all grades					
No. 200 sieve (not more than)	10%	10%	10%	10%	10%	10%

Liquid limit for that portion of the fine aggregate passing the No. 40 sieve shall not exceed 25 nor shall the plasticity index exceed six.

Construction requirements of the pit run selected surfacing shall be laid down in conformity with the approved typical section. The gravel base course shall be placed in uniform thickness of 12 inches and compacted to 95 percent of the maximum dry density as determined by AASHTO Designation T-99. If water is needed to facilitate compaction

and bonding of the material, it shall be applied. The subgrade shall be finished within a tolerance of three-quarters (3/4) of an inch measured as a vertical ordinate from the face of a ten 10-foot straight edge.

TABLE 7.4

CRUSHED TOP SURFACING TYPE ~A~			
Table of Gradations			
Passing	Grade 1	Grade 2	Grade 3
1 inch sieve	100%		
3/4 inch sieve		100%	
1/2 inch sieve			100%
No. 4 sieve	40-70%	40-70%	40-70%
No. 10 sieve	25-50%	25-50%	25-50%
No. 200 sieve	5-10%	5-10%	5-10%

The aggregate for all grades, including added binder or filler, shall meet the following supplemental requirements:

a. The dust ratio, that portion passing the No. 200 sieve, shall not be greater than two-thirds (2/3) of that portion passing the No. 40 sieve.

b. The liquid limit for that portion of the fine aggregate passing the No. 40 sieve shall not exceed 25 nor shall the plasticity index exceed six.

c. Compaction of type "A" crushed surfacing shall be compacted to 95 percent of the maximum dry density as determined by AASHTO Designation T-99. If water is needed to facilitate compaction and bonding of the material, it shall be applied to bring material within optimum moisture content. The surface course shall be finished within a tolerance of one-half (1/2) inch measured as a vertical ordinate from the face of a 10-foot straight edge.

Table 7.5
SUBDIVISION ACCESS ROAD INTERSECTION SPACING

	Access Road intersects with an arterial or road with speed limit of more than 45 MPH	Access Road intersects with a collector or road speed limit between 30 and 45 MPH	Access Road intersects with a local road or road with speed limit below 30 MPH
Partial Access *	315 feet	150 feet	150 feet
Full Access **	660 feet	330 feet	150 feet
Minimum separation	315 feet	150 feet	150 feet

* Partial Access includes right turn in and out only.
**Full Access allows all turn movements, in and out.

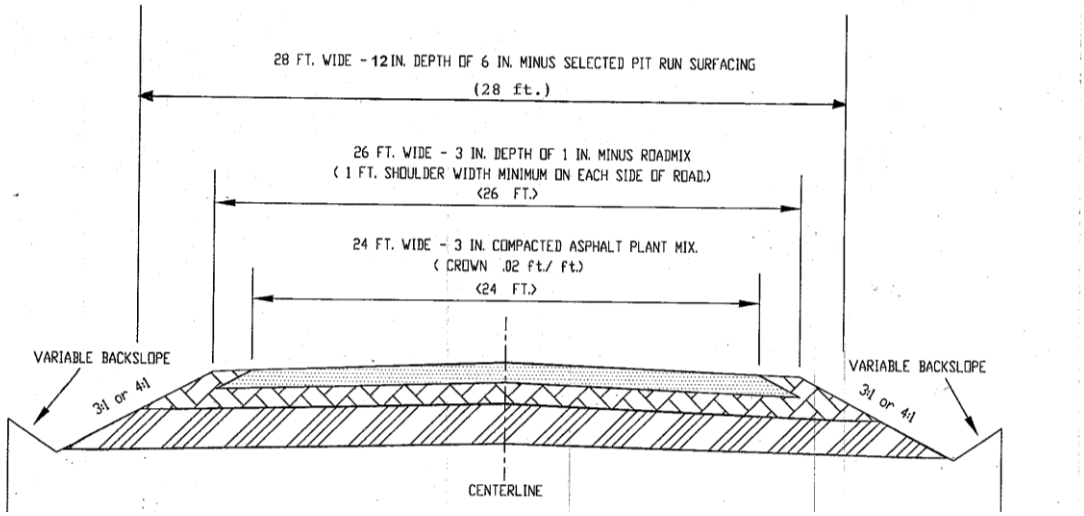
4. Road Sign Standards. Location of road signs shall be designated on road signage plans, which shall be submitted for review and approval by the County and/or MDT. All road signage plans shall be consistent with the MUTCD current edition.

   a. Posts. Posts shall be treated or cedar 4"x4" installed 30 inches deep and minimum seven feet to the bottom of the signage. All mounting hardware shall be die cast of No. 380 Alloy with tensile strength of 49,000 psi with excellent resistance to corrosion. The brackets shall have two angled gussets, or ribs on each side for extra strength. All sets of brackets shall be tapped and drilled for ten each five-sixteenth inch (5/16") zinc dichromate placed Allen-type set screws having self-locking saw tooth ends.

   b. Signs. All sign blanks as specified: all nine inch wide by 24-inch, 30-inch, or 36-inch long signs of either .08 inch flat aluminum with short radius rounded corners or of .08 inch to .10 inch extruded aluminum with heavy boarders. All blanks to be coated with engineer grade green Scotchlite or equivalent reflective surface. All letters in six inch white Scotchlite or equivalent reflective surface.

5. Road Improvement Warranty. A two-year written warranty from the project contractor to Gallatin County is required for all onsite and offsite road improvements.

FIGURE 7.A.
GALLATIN COUNTY TYPICAL ROAD STANDARDS



Engineer inspection and written certification required on each of the following:

1. Subgrade and ditches.
2. Compacted pit run surfacing, 6 in. minus.
3. Compacted crushed top surfacing, Type “A”, 1 in. minus.
4. Finished roadway and road signs.
5. Sterilant shall be applied to full width of finished gravel surface prior to paving.

J. Pedestrian Facilities.

1. Pedestrian Facilities. Pedestrian facilities shall be required by the following table:

TYPE OF SUBDIVISION	PEDESTRIAN FACILITY REQUIRED
Commercial Subdivision	Pedestrian Facility on both sides of an interior road.
Residential Subdivision Net Density equal to or higher than 1 dwelling unit per half acre.	Pedestrian Facility on both sides of an interior road.
Residential Subdivision Net Density higher than 1 dwelling unit per acre and lower than 1 dwelling unit per half acre.	Pedestrian Facility on at least one side of an interior road.
Residential Subdivision Net Density lower than 1 dwelling unit per acre.	No Pedestrian Facility required

Note: For mixed use Subdivisions (commercial / residential, multiple density residential) Pedestrian Facilities each portion shall be completed within the Subdivision in accordance with the above table.

2. Pedestrian Facility Standards. A Pedestrian Facility shall:

   a. be separated from the Roadway with a minimum 4-foot wide boulevard and be a minimum of 5 feet in width; and

   b. be maintained by the property owner's association as agreed to by Covenant recorded with Final Plat; and

   c. be located within the dedicated public road Right-Of-Way or public road easement; and

   d. be a permeable or impermeable surface capable of being used year round.

K. Trails Plan. For all Subdivisions, where a Trails Plan identifies an interior Trail corridor adjacent to or through a proposed Subdivision, a Subdivider shall construct Trails in accordance with the Trails Plan.

L. Transit.

1. Transit Stops. The Subdivider may be required to dedicate an area of land for a transit stop when a transit route exists or is proposed adjacent to the Subdivision. The Subdivider may be required to provide necessary facilities for a transit stop including but not limited to a shelter and signage, when necessary to reasonably mitigate impacts from the proposed subdivision on existing transit infrastructure.

M. Subdivisions within an Adopted Growth Policy of a City or Town.

1. City or Town Road Standards. All commercial Subdivisions and residential Subdivisions having a Net Density higher than one dwelling unit per half an acre and located within an adopted Growth Policy area of an incorporated city or town shall meet the city or town's minimum road design standards. Where a Subdivision is within an area in which the city or town's Growth Policy areas overlap, the minimum road design standards shall be those for the city or town's Growth Policy that has been adopted by the Gallatin County Commission.